

Steps To Use Puppet Code

Objective: Steps required to apply puppet code to

- Automate Jenkins installation with Puppet
- Ensure required dependencies (Java 21, fontconfig) are installed
- Configure Jenkins to run on custom port (8000)
- Enable Jenkins service
- Ensure idempotency so repeated runs do not cause errors or duplicate configurations

Steps To Use Puppet Code

1. Create Puppet Directory Structure for jenkins on puppet server

create

- jenkins/manifests directory inside /etc/puppetlabs/code/environments/production/modules/ directory
- init.pp file inside manifests directory

```
[root@master modules]# pwd
/etc/puppetlabs/code/environments/production/modules
[root@master modules]# ls -ltr
total 0
[root@master modules]# mkdir jenkins
[root@master modules]# ls -ltr
total 0
drwxr-xr-x 2 root root 6 Jan  3 16:23 jenkins
[root@master modules]# cd jenkins
[root@master jenkins]# mkdir manifests
[root@master jenkins]# cd manifests/
[root@master manifests]# ls
[root@master manifests]# touch init.pp
[root@master manifests]# ls -ltr
total 0
-rw-r--r-- 1 root root 0 Jan  3 16:24 init.pp
[root@master manifests]# pwd
/etc/puppetlabs/code/environments/production/modules/jenkins/manifests
[root@master manifests]#
[root@master manifests]# tree /etc/puppetlabs/code/environments/production/modules/jenkins
├── manifests
│   └── init.pp
```

1 directory, 1 file

```
[root@master manifests]#
```

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2. Put the PuppetCode inside the init.pp file on puppet server

- Copy the code from “**PuppetCode**” file and past it inside the **init.pp** file.
- PuppetCode file is shared as an attachment

```
[root@master manifests]# pwd
/etc/puppetlabs/code/environments/production/modules/jenkins/manifests
[root@master manifests]# ls
init.pp
[root@master manifests]# cat init.pp
[root@master manifests]# vi init.pp
[root@master manifests]#
[root@master manifests]# cat init.pp
#Puppet code to install jenkins on CentOS 9
class jenkins {
# -----
# Jenkins repository
# -----
yumrepo { 'jenkins':
baseurl => 'https://pkg.jenkins.io/redhat-stable',
descr => 'Jenkins Stable Repo',
enabled => 1,
gpgcheck => 1,
gpgkey => 'https://pkg.jenkins.io/redhat-stable/jenkins.io-2023.key',
}
# -----
# Adoptium repository
# -----
yumrepo { 'adoptium':
baseurl => 'https://packages.adoptium.net/artifactory/rpm/rhel/$releasever/$basearch',
descr => 'Adoptium',
enabled => 1,
gpgcheck => 1,
gpgkey => 'https://packages.adoptium.net/artifactory/api/gpg/key/public',
}
# -----
# Required packages
```

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3. Node Declaration in site.pp on puppet server

- Apply the jenkins class on node agent01.puppet.io inside site.pp file
- Node name is **the hostname of the Puppet agent**.
- **Replace agent01.puppet.io with the actual agent hostname, in your environment.**

```
[root@master manifests]# pwd
/etc/puppetlabs/code/environments/production/manifests
[root@master manifests]# ll
total 4
-rw-r--r-- 1 root root 48 Jan  3 13:48 site.pp
[root@master manifests]# cat site.pp
node 'agent01.puppet.io' {
  include jenkins
}
[root@master manifests]#
```

Your agent hostname

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4. Puppet Agent Configuration

- Puppet agent must be configured to communicate with the Puppet server
- This is done in the agent's puppet.conf file
- Server -> Puppet master hostname
- Environment -> Puppet environment (e.g. production)
- Certname -> Puppet agent hostname

```
[root@agent01 ~]# cat /etc/puppetlabs/puppet/puppet.conf | grep -v "#"  
[main]  
certname = agent01.puppet.io  
server = master.puppet.io  
environment = production  
runinterval = 1h  
[root@agent01 ~]#  
[root@agent01 ~]#
```

Note : Replace above parameter values(server,environment,certname as per your environment

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5. Apply the Puppet Code on Puppet Agent

- Run `puppet agent -t` to apply Puppet Code on Agent

```
[root@agent01 ~]# puppet agent -t
Info: Using environment 'production'
Info: Retrieving pluginfacts
Info: Retrieving plugin
Info: Retrieving locales
Info: Caching catalog for agent01.puppet.io
Info: Applying configuration version '1767437414'
Notice: /Stage[main]/Jenkins/Yumrepo[jenkins]/ensure: created (corrective)
Info: Yumrepo[jenkins](provider=inifile): changing mode of /etc/yum.repos.d/jenkins.repo from 600 to 644
Notice: /Stage[main]/Jenkins/Yumrepo[adoptium]/ensure: created (corrective)
Info: Yumrepo[adoptium](provider=inifile): changing mode of /etc/yum.repos.d/adoptium.repo from 600 to 644
Notice: /Stage[main]/Jenkins/Package[jenkins]/ensure: created
Notice: /Stage[main]/Jenkins/Service[jenkins]/ensure: ensure changed 'stopped' to 'running'
Info: /Stage[main]/Jenkins/Service[jenkins]: Unscheduling refresh on Service[jenkins]
Notice: Applied catalog in 25.96 seconds
[root@agent01 ~]#
```

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6. Outcome

- Jenkins installed and configured
- Firewall port opened
- Jenkins service running on port 8000

```
[root@agent01 ~]# ps -ef |grep -i jenkins
jenkins 3385      1  4 18:50 ?        00:00:10 /usr/bin/java -Djava.awt.headless=true -jar /usr
/share/java/jenkins.war --webroot=/var/cache/jenkins/war --httpPort=8000
root    3551    2710  0 18:54 pts/0    00:00:00 grep --color=auto -i jenkins

[root@agent01 ~]#
[root@agent01 ~]# date
Sat 03 Jan 2026 06:54:15 PM +08
[root@agent01 ~]# systemctl status jenkins
● jenkins.service - Jenkins Continuous Integration Server
   Loaded: loaded (/usr/lib/systemd/system/jenkins.service; enabled; preset: disabled)
   Drop-In: /etc/systemd/system/jenkins.service.d
            └─override.conf
   Active: active (running) since Sat 2026-01-03 18:50:30 +08; 4min 4s ago
     Main PID: 3385 (java)
        Tasks: 37 (limit: 7720)
       Memory: 383.3M
          CPU: 10.342s
         CGroup: /system.slice/jenkins.service
                 └─3385 /usr/bin/java -Djava.awt.headless=true -jar /usr/share/java/jenkins.war --webro

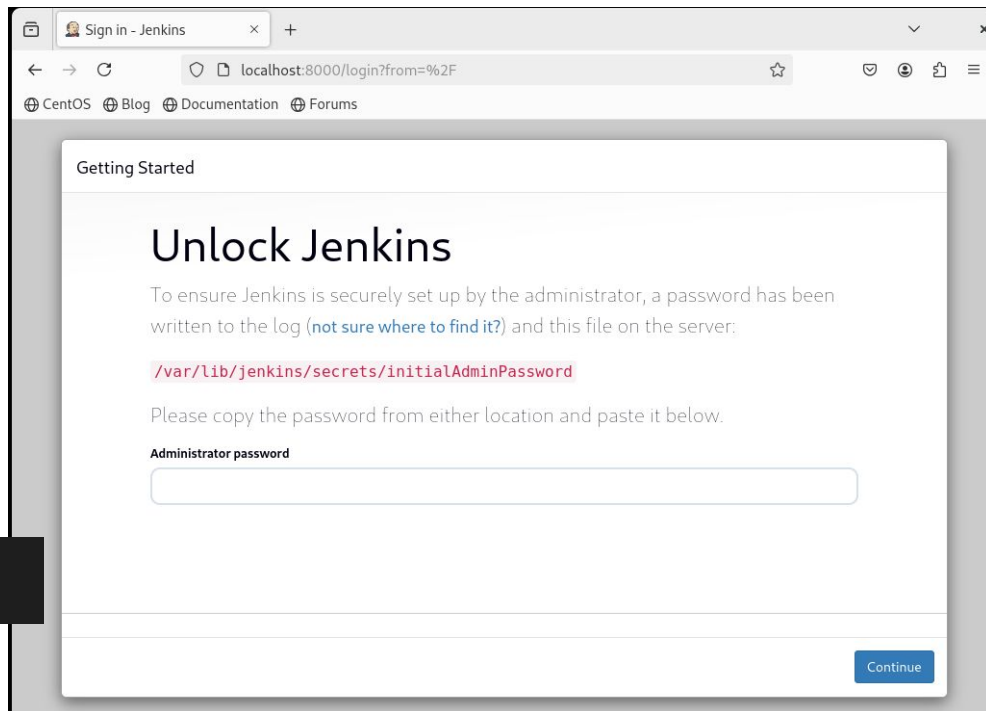
Jan 03 18:50:25 agent01 jenkins[3385]: [LF]> This may also be found at: /var/lib/jenkins/secrets/in>
Jan 03 18:50:25 agent01 jenkins[3385]: [LF]>
Jan 03 18:50:25 agent01 jenkins[3385]: [LF]> *****
Jan 03 18:50:25 agent01 jenkins[3385]: [LF]> *****
Jan 03 18:50:25 agent01 jenkins[3385]: [LF]> *****
Jan 03 18:50:30 agent01 jenkins[3385]: 2026-01-03 10:50:30.151+0000 [id=32] INFO jenk>
Jan 03 18:50:30 agent01 jenkins[3385]: 2026-01-03 10:50:30.183+0000 [id=24] INFO huds>
Jan 03 18:50:30 agent01 systemd[1]: Started Jenkins Continuous Integration Server.
Jan 03 18:50:32 agent01 jenkins[3385]: 2026-01-03 10:50:32.143+0000 [id=50] INFO h.m.>
Jan 03 18:50:32 agent01 jenkins[3385]: 2026-01-03 10:50:32.144+0000 [id=50] INFO huds>
[root@agent01 ~]#
```

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7. Verification

- Open browser and access jenkins UI
- localhost:8000
- rpm -qa command to verify jenkins packages installed successfully

```
[root@agent01 ~]# rpm -qa --last|grep -i jenkins
jenkins-2.528.3-1.1.noarch          Sat 03 Jan 2026 06:50:20 PM
[root@agent01 ~]#
```



Steps To Use Puppet Code

8. Check Idempotency

- Run the puppet agent -t to ensure idempotency so repeated runs do not cause errors or duplicate configurations

```
[root@agent01 ~]# puppet agent -t
Info: Using environment 'production'
Info: Retrieving pluginfacts
Info: Retrieving plugin
Info: Retrieving locales
Info: Caching catalog for agent01.puppet.io
Info: Applying configuration version '1767437901'
Notice: Applied catalog in 0.74 seconds
[root@agent01 ~]#
[root@agent01 ~]#
[root@agent01 ~]#
```